AMENDMENTS

Please amend the present application as follows:

In the Specification

The following is a copy of portions of Applicants' specification that identifies language being added with underlining (e.g., "abc") and language being deleted with strikethrough (e.g., "~~abc~~"), as is applicable:

For the paragraph beginning on page 4, line 35, please amend as follows:

Content provided by the Content Provider 18 is communicated by the Content Provider 18 to one or more headends 26. From those headends 26 the content is then communicated to the core network 30 of hubs 34 and onto a plurality of Hybrid/Fiber Coax (HFC) Access Networks (only one HFC Access Network 38 is illustrated). The HFC Access Network 38 typically comprises a plurality of HFC nodes 42, each which may service a local geographical area. The content provided from the Content Provider 18 is transmitted through the headend 26, hub 34 and HFC Access Network 38 downstream to one or more taps 46 from each one of the HFC nodes 42 of the HFC Access Network 38. The hub 34 connects to the HFC node 42 through the fiber portion of the HFC Access Network 38. Usually, the HFC node 42 connects to a subscriber DHCT 14 through coaxial cable in a logical tree configuration, which is where the optical-to-electrical and electrical-to-optical conversions of the HFC network take place. From the HFC node 42 a coaxial drop connects the tap 46, in one implementation, to a Network Interface ~~Units~~ Unit (NIU) 52, which is a network demarcation point physically located on the side of the home of the subscriber. The NIU 52 provides a transparent interface between the HFC node 42 and the subscribers' internal wiring. In other implementations, the tap 46 connects directly to the DHCT 14. Coaxial cables are

preferred in this part of the system because the electrical signals can be easily repeated with RF amplifiers. Typically, six amplifiers or less are located in series between the HFC node 42 and the subscriber DHCTs 14. As DBDSs are well known to those of ordinary skill in the art, further description of the DBDS 10 of FIG. 1 will not be contained herein.

<u>For the paragraph beginning on page 10, line 7, please amend as follows</u>:

In a typical system, the headend 26B receives input signals such as programming, services and other information from content providers 18 (FIG. 1). The input signals may be transmitted from sources to the headend 26B via a variety of transmission paths, including satellites (not shown), and terrestrial broadcast transmitter and antenna~~,~~ (not shown). The headend 26B can also receive content from a direct feed source 210 via a direct line 212. Other input sources from content providers 18 include a video camera 214 or an application server 216. Application server 216 can also be located at the headend 26B, among other locations. The application server 216 may include more than one line of communication 218. The signals provided by the content or programming input sources can include a single program or a multiplex that includes several programs.

<u>For the paragraph beginning on page 10, line 16, please amend as follows</u>:

The headend 26B generally includes one or more receivers 218 that are each associated with a content source. MPEG encoders, such as encoder 220, are included for digitally encoding things such as local programming or a feed from video camera 214. The output signal from encoder 220 is an MPEG program stream containing MPEG programming. The MPEG program stream may be multiplexed with input signals

from switch 224, receiver ~~218(D)~~ 217 and control system (DNCS) 223. The multiplexing logic 222 processes the input signals and multiplexes at least a portion of the input signals into transport stream 240.

For the paragraph beginning on page 10, line 23, please amend as follows:

The switch, such as asynchronous transfer mode (ATM) switch 224, provides an interface to an application server 216. There can be multiple application servers 216 providing a variety of services such as a Pay-Per-View service, ~~including~~ video on demand (VOD), a data service, an Internet service, a network system, or a telephone system. Service and content providers 18 (shown in FIG. 1) may download content to an application server 216 located within the DBDS 10. The application server 216 may be located within headend 26B or elsewhere within DBDS 10, such as in a hub 34.

For the paragraph beginning on page 10, line 30, please amend as follows:

The various inputs into the headend 26B are then combined with the other information from the control system 232, which is specific to the DBDS 10, such as local programming and control information, which can include among other things conditional access information. The headend 26B contains one or more modulators (or QAM Group) 228 to convert the received transport streams 240 into modulated output signals suitable for transmission over the transmission medium 250 through the network 38. Each modulator 228 may be a multimodulator including a plurality of modulators, such as, but not limited to, QAM modulators, that radio frequency modulate at least a portion of the input ~~the~~ transport streams 240 and transmit therefrom output transport streams 242. The output signals 242 from the various modulators 228 or multimodulators are combined, using equipment such as a combiner ~~230~~ 246, for input into the transmission

medium 250, which is sent via the in-band delivery path 254 to the subscriber locations (not shown).

For the paragraph beginning on page 11, line 9, please amend as follows:

There are various types of interfaces for interconnecting headend equipment carrying MPEG transport data. The most commonly known is the asynchronous serial interface or ASI. ASI provides a high data capacity single wire interconnection. An ASI output interface preferably receives eight bit data words at a rate of up to 27 Mwords per second and codes them into ten bit words. These words are serialized and ~~outputs~~ output as a 270 MB/s serial data stream. If no data is available from the source, the ASI interface 240 stuffs the link with a special ten- bit character which is discarded by the ASI receiver. This allows the interface to support data rates from zero b/s to 216 b/s. Since an ASI interface 240 will support the data rate requirement for multiple DOCSIS forward channels, it is desired to provide a scheme for multiplexing several DOCSIS signals onto a single ASI interface 240. This will allow equipment with multiple media access control functions to interface to modulator functions with a single data connection. Since all of the media access control functions 224 cannot have access to the ASI interface 240 simultaneously, there preferably is some sort of buffering, and a need to account for resulting time delays.

For the paragraph beginning on page 11, line 21, please amend as follows:

Multiplexing different media access control outputs 226 is not possible with typical dedicated QAM modulators, as each media access control functions 224 in conventional DOCSIS ~~complaint~~ compliant systems is typically attached directly to a modulator 228 dedicated to one DOCSIS data stream. In the preferred embodiment,

the media access control functions 224 are separated from the modulator 228. In this manner, multiple media access control functions 224 may be multiplexed into one DOCSIS data stream. Additionally, MPEG programming such as video or audio from a video camera 214 or other input source 210 may be multiplexed with the DOCSIS data into one stream of transport packets. In the multiplexed data stream some of the transport packets may contain DOCSIS data and other transport packets may contain MPEG programming (video and audio).

For the paragraph beginning on page 14, line 30, please amend as follows:

Referring again to the DHCT 14 shown in FIG. 4, after the one or more tuners 345 select one or more transmission channels, incoming data is forwarded to hardware 114, which comprises circuitry with capability for demodulating 116, demultiplexing and parsing 118, and decrypting 120 the incoming signals. One or more components of hardware 114 can be implemented with software, a combination of software and hardware, or preferably, in hardware. More specifically, the hardware components 114 are capable of QAM demodulation, Forward Error Correction (~~FER~~ FEC), Parsing MPEG-2 Transport Streams, Packetized Elementary Streams and Elementary Streams, and Decryption, as is well known to those of ordinary skill in the art, to counter the effect of signal processing of broadcast media content and/or data in the headend 26 (FIG. 3). Analog signal processing module (ASPM) 999 includes other similar processing for analog signals, such as descramblers, decoders, digitizers, signal amplifiers, and other circuitry for signal or error recovery.

<u>For the paragraph beginning on page 22, line 3, please amend as follows</u>:

As shown in FIG. 4, components of the DHCT 14 include an analog descrambler and analog video decoder (analog signal processing module (ASPM) 999) with capability for analog video or audio descrambling, and a security processor 130 working in conjunction with a decryptor 120 to decrypt encrypted digital video, audio or data, as is well known to those of ordinary skill in the art. The security processor 130 functions to authorize paying subscribers DHCTs to execute specialized features of the DHCT 14, such as executing the application and receiving media content and/or data allowed to be received by only those DHCTs that contain a local storage device 373. The security processor 130 is a secure element for performing security and conditional access related functions. More particularly, the security processor 130 functions to authorize a paying subscriber's DHCT 14 to execute specialized functionality of the DHCT 14, such as receiving and decrypting (or descrambling) encrypted (or scrambled) media content and other data sent from a remote device. Security processor 130 preferably includes a microprocessor and a memory that only the microprocessor of the security processor 130 may access. Preferably, security processor 130 is contained in a tamper proof package. With reference to FIG. 3, in one implementation, encryption is applied to the data stream of requested media content at the QAM group 228 at the headend 26 according to encryption methods well-known to those of ordinary skill in the art. An encryption component resident in the QAM group 228 in the headend 26 and under the direction of the DNCS ~~323~~ <u>223</u> encrypts, for example, MPEG-2 transport stream packets used to transmit the media content. The encrypted media content also includes, in one embodiment, entitlement control messages that are recognized by the security processor 130 (FIG. 4) at the DHCT 14 as information needed to decrypt the encrypted media content. Security processor 130 preferably stores authorization information, wherein the

authorization information indicates that the subscriber is entitled to access the media content. The authorization information is obtained from one or more entitlement messages sent by the headend 26 after, or concurrently with, initialization of the DHCT 14 into a purchased service. If the authorization information indicates that the subscriber is entitled to the media content, security processor 130 generates a code word or key based on the authorization information and the received entitlement control message, and the security processor 130 uses this key to decrypt the encrypted media content at the decryptor 120.

For the paragraph beginning on page 23, line 14, please amend as follows:

Additionally, one or more Digital Audio Decoders ~~118~~ 138 in the DHCT 14 can decode the compressed digital audio streams associated with the compressed digital video or read as an audio object from the local storage device 373 in a similar fashion, allocating respective buffers as necessary. It should be appreciated that in some implementations only one audio buffer may be required. The preferred embodiment of the invention enables the simultaneous display of multiple video pictures, some broadcast programs, and others read as media objects from the local storage device 373, with respective graphical and textual information. Graphical and textual objects are displayed, for instance via application invocation of a standard library of graphics or objects as is well known to those of ordinary skill in the art, which may be provided by the operating system 353. Once created and stored in system memory 112, the graphical and textual objects are transferred by processor 110 from system memory 112 to the Media Memory 126, either to the Off-screen Composition Buffer 131 or, in another aspect of the invention, directly to the Display Buffer 135. Alternatively, the graphical and textual objects are rendered directly in the Display Buffer 135. According to one

aspect of the invention, the system memory 112 and Media Memory 126 may be unified as one physical memory device.

For the paragraph beginning on page 24, line 11, please amend as follows:

It should be appreciated that the Media Memory 126 is a memory of finite number of bytes, and it serves as a repository for different data components. Compressed MPEG-2 video streams are deposited in a section of Media Memory 126 allocated for compressed video. Likewise, compressed digital audio streams are deposited in a section of Media Memory 126 allocated for compressed audio. The Digital Audio Decoder ~~118~~ 138 stores decompressed audio in a similar section of Media Memory 126 dedicated to store reconstructed audio. Decompressed audio is fed into an audio port (not shown) for playback.

For the paragraph beginning on page 24, line 18, please amend as follows:

A Memory Controller 134 in the DHCT 14 grants access to transfer data from system memory 112 to the Display Buffer 135 in Media Memory 126 in a timely way that safeguards from the generation of tear artifacts on the TV display. Data transfer is granted to locations in the Display Buffer 135 corresponding to locations already passed by the raster-scan ordered data fed from Display Buffer 135 into the DENC 123. Thus, data written to the Display Buffer 135 is always behind (in raster-scan order) the Display Buffer 135 locations read and fed into the DENC 123. Alternatively, data can be written to a secondary Display Buffer ~~135~~, also called an Off-Screen or Composition Buffer 131. The Off-Screen Buffer 131, or parts thereof, are then transferred to the Display Buffer 135 by effecting a Media Memory 126 to Media Memory 126 data transfer during suitable times (e.g., during the vertical blanking video interval). The Off-Screen Buffer

131 and Display Buffer 135 can be alternated in meaning under program control upon completion of writing all objects into the Off-Screen Buffer. The Memory Controller 134 uses a pointer that points to the beginning of the Display Buffer 135 and another pointer that points to the beginning of the Off-Screen Buffer 131. Both pointers are stored in either memory 112 or special registers internal to the Memory Controller 134. Therefore, to effectuate alternating the meaning of the Display Buffer ~~137~~ 135 and the Off-Screen Buffer 131, the content of the two pointer repositories are swapped.

For the paragraph beginning on page 32, line 3, please amend as follows:

As described with the previous implementations, the DMFSML hardware status check API 901 can be invoked when the user tunes to a channel to watch a program or ~~move~~ movie (for example, via the WatchTV application 362). Again assuming a first-time start-up, after confirming local storage is present (e.g. storage device 373), the application can request, via a GUI, whether the user desires enhanced services. If the user decides to have enhanced services, the DSFML open file API 902 can be invoked, causing the read and write of hyper-linked media objects from a second file system (i.e. virtual file system), to a first file system (i.e. local storage device 373) via the DMFSML read and write API (903 and 904, respectively).